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EXAMINER				
HOLTON, STEVEN E				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/520,352

Applicant(s)

SONG ET AL.

Examiner

Steven E. Holton

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 11/10/2008. Claims 1 and 3-19 are currently pending in the application. An action follows below:

Response to Arguments

2. Applicant's arguments regarding claim 1 filed 11/10/2008 have been fully considered but they are not persuasive.

The Kwon reference teaches the idea of driving a display with a image display period and then a black data period. Further Kwon discloses that the black data period can be driven during a period when the data is applied simultaneously to all of the pixels at the same time (claim 8). The idea of selecting multiple rows of a display to write the same data to multiple lines is well-known in the art and adjusting the driving methods of the Mizutani and Surguy references so that the black image data is written to all pixels simultaneously would be obvious to one of ordinary skill in the art in light of the teachings of Kwon.

Applicant's arguments with respect to claims 3-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 3-7, 16, 17, and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 3, the amended method states that between the period of selecting the last gate line of a first scanning area and selecting the first gate line of a second scanning area, "a gate-on voltage is applied to all gate lines except gate lines included in the first and second area, and then the black data signal is applied to the pixels except pixels included in the first and second areas." The Examiner believes these claims are expected to refer to the driving method shown in Figs. 6 and 8 of the disclosure. As shown in the figures, during the time between the period of scanning one area and scanning a second area, a black image is applied to a different scanning group of the display but not the entire rest of the display (example Fig. 6, element c). There is similar no teaching within the disclosure discussion a step of applying a black driving voltage to all areas of the display other than a first and second scanning area.

Therefore, the limitations of the method in claim 3 are not enabled by the disclosure and constitute new matter.

Claims 4-7, 16, 17, and 19 are dependent on claim 13 and inherit the rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 8-10, 12-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani in view of Surguy (USPN: 5233338) and in further view of Kwon (USPN: 6947034).

Regarding claims 1 and 8, the claims are drawn to a display device and associated method of operation and are considered together.

Regarding claim 1, Mizutani discloses a liquid crystal display device (Fig. 2, element C) with a plurality of pixels in a matrix (Fig. 2, elements 5, 6, 7, and 1b form different pixels in a matrix), a gate driver (Fig. 2, element 12), a data driver (Fig. 2, element 13), and a signal controller for providing control and gray signals to the drivers (Fig. 2, element 23). Mizutani further discloses the data signals include normal data signals and black data signals and applies the two signals alternately to the pixels (Figs. 3A and 3B; col. 3, line 50 - col. 4, line 6).

However, Mizutani does not disclose reversing the scanning direction of the display from one frame to another frame. Also, Mizutani does not disclose applying black data signals to all of the pixels simultaneously.

Surguy discloses a liquid crystal display device that reverses the scanning direction of the display for each frame (Fig. 4).

At the time of invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Mizutani and Surguy to produce a liquid crystal display device that inserts black data after normal data for each frame and reverses the scanning direction of the display for each frame. The motivation would have been to increase the amount of lamp illumination time during driving of the normal display data and improving the brightness of the display (Surguy, col. 1, lines 61-64). Thus, it would have been obvious to one of ordinary skill in the art that the scanning direction of the display device of Mizutani could be reversed after each frame using the teachings of Surguy.

The combination of Mizutani and Surguy does not disclose applying the black data signals to all of the pixels simultaneously.

Kwon discloses a method of driving a liquid crystal display device so that image data is first applied to the pixels and then black image data is applied to the pixels (Figs. 4 and 6). Kwon further discloses that the black data voltages (called adjust voltages) can be simultaneously applied to multiple gate lines at the same time (claim 8).

At the time of invention it would have been obvious to one of ordinary skill in the art to modify the teachings of Mizutani and Surguy with the teachings of Kwon. It would

have been obvious that the black image data applied by Mizutani could be modified so that instead of applying the black data to each line in succession, the black data could be applied to multiple or all of the lines simultaneously as described by Kwon. This would have been a matter of design choice for applying the black signal in series or simultaneously depending on the desired amount of time used for a single frame period. Thus, it would have been obvious to combine the teachings of Mizutani, Surguy, and Kwon to produce a method of operation and a device as described in claims 1 and 8.

Regarding claims 9 and 15, Mizutani discloses applying normal data voltages with opposite polarity for each successive frame (Fig. 9, the "pixel electrode potential" element 1b line shows a set of positive voltages in period F11 and a set of negative voltages in period F21). The Examiner notes that this driving technique is commonly known as 'frame inversion'.

Regarding claim 10, the black voltage data applied by Mizutani is typically a zero voltage signal (Fig. 9, the data applied during period F12 and F22 results in zero voltage applied to the display device). However, if the black voltage did provide a specific polarity to the display (in the case of a normally white display where a black image requires an applied voltage), it would have been obvious to one of ordinary skill in the art that the polarity of successive black image data could be inverted from one frame to the next frame. This technique is known as 'frame inversion' and is well understood within the art. Mizutani shows the use of frame inversion with regard to the display data applied during the normal periods, F11 and F21, shown in Fig. 9. It would have been obvious to one of ordinary skill in the art that the polarity of any black data voltages

could also be inverted for each successive frame using the same inversion technique used by Mizutani during the normal data voltage period.

Regarding claims 12 and 14, Surguy discloses reversing the scanning direction of a display for each frame. It would have been obvious to combine the teachings of Surguy and Mizutani to disclose a display device that displayed normal image data and black image data and reversed the scanning direction for each frame.

Regarding claim 13, Mizutani discloses a liquid crystal display device (Fig. 2, element C) that includes a plurality of pixels (Fig. 2, elements 5, 6, 7, and 1b form individual pixels). Mizutani further discloses driving the display device with normal signals and black signals and alternately applying the normal and black signals to the display over time (Figs. 3A and 3B; col. 3, line 50 - col. 4, line 6). Because the time periods for the image signals and black signals are held constant (Figs. 3A and 3B) the average time over adjacent frames of the normal data is inherently uniform.

Regarding claim 18, neither Mizutani, Surguy, nor, Kwon disclose the liquid crystal display is in an optically compensated bend (OCB) mode. It would have been a matter of design choice for one of ordinary skill in the art to use a liquid crystal display device in either an OCB or other type of known configuration. The selection of the type of configuration would depend on desired driving and response speed of the display device, cost of manufacturing and other known differences between types of liquid crystal display devices.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Son et al. (USPN: 6693618), hereinafter Son.

Regarding claim 11, Son discloses a method of driving a liquid crystal display device including "a first data voltage application step applying normal data voltages to a first area of the plurality of areas (Fig. 6, element 128a); a second data voltage application step sequentially applying normal data voltages to a second area through an Nth area (Fig. 6, the similar areas shaded similarly to 128a continue through groups G2-Gn) ; and a third data voltage application step applying black data voltage to the first area (Fig. 6, element 126b)". Son further shows that the periods between the image data and the black data for each pixel are roughly the same length in time (Fig. 6, the equal time divisions of T1 and T2 show that the black and image data are held on each pixel for the same amount of time). Son discloses applying the black image data to the first group and a time between applying image data to the third group and the fourth group (Fig. 6).

Son does not expressly disclose applying black data to the first group between the end of applying normal data to the N-1 group and the Nth group.

Son does not show applying the black image data to a period between the N-1 and Nth groups but rather between two different groups (the 3rd and 4th groups). At the time of invention it would have been obvious to one of ordinary skill in the art that the specific time to applying black voltage to the first group could be shifted in time to correspond to the time between applying normal image voltages to the N-1 and Nth groups or any other particular set of lines as a matter of design choice. The shifting of

the timing of the application of black data to the first group would be based on the number of groups in the display or the desired delay of the amount of time between the writing of image data and the writing of black image data to a particular group of pixels. Shifting the timing of signals within a driving circuit is well understood to those of ordinary skill in the art so changing the particular timing of the period to apply black data to the first group could be shifted to correspond with the time between the N-1 and Nth groups as described by claim 11.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iida et al. (USPN: 6236688) discloses simultaneously applying black data signals to desired regions by selecting all data lines to apply the black image data.
7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571)272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/
Supervisory Patent Examiner, Art Unit 2629

Steven E. Holton
Division 2629

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January 13, 2009